CLAIMS

What is claimed is:

1. A method for enhancing a resolving power of a tunable optical filter comprising:

applying an optical input to the tunable optical filter;

applying to the tunable optical filter an electrical signal having a first component having a first frequency and a second component having a second frequency, wherein the second frequency is higher than the first frequency;

detecting an optical output of the tunable optical filter.

2. The method of claim 1, wherein the tunable optical filter has a transmittance spectrum that can be represented by an airy function.

3. The method of claim 1, wherein the tunable optical filter is a tunable Fabry-Perot optical filter.

4. The method of claim 1, wherein the optical input comprises a plurality of optical channels.

5. The method of claim 1, wherein the first component is a ramp signal and the second component is a sinusoidal signal.

6. The method of claim 1, wherein detecting an optical output of the tunable optical filter comprises:

applying the optical output of the tunable optical fiber to a photodetector;

applying an electrical output from the photodetector to a lock-in detector;

generating an electrical signal having a third frequency, wherein the third frequency is a multiple of the second frequency;

generating a phase-shifted electrical signal by phase-shifting the electrical signal having the third frequency;

applying an electrical signal having a third frequency to the lock-in detector,

monitoring an output of the lock-in detector.

7. The method of claim 6, wherein the third frequency is twice the second frequency.

8. An apparatus comprising:

circuitry that generates a first component having a first frequency;

circuitry that generates a second component having a second frequency, wherein the second frequency is higher than the first frequency;

circuitry that combines the first component and the second component to generate an electrical signal;

circuitry that applies the electrical signal as an electrical tuning input to a tunable optical filter.

9. The apparatus of claim 8, wherein the tunable optical filter is a tunable Fabry-Perot optical filter.

10. The apparatus of claim 8, wherein the first component is a ramp signal and the second component is a sinusoidal signal.

11. The apparatus of claim 8, further comprising:

a photodetector that detects an optical output of the tunable optical filter;

a lock-in detector coupled to an electrical output of the photodetector;

frequency doubling circuitry that is coupled to the lock-in detector and that doubles the second frequency;

a phase shifter coupled between the frequency doubling circuitry and the lock-in detector.

12. An apparatus comprising:

means for generating a first electrical signal having a first frequency;

means for generating a second electrical signal having a second frequency that is higher than the first frequency;

means for applying a combination of the first and second electrical signals to tunable optical filtering means.

13. The apparatus of claim 12, wherein the tunable optical filtering means comprises a tunable Fabry-Perot optical filter.

14. A method comprising:

generating a first electrical signal having a first frequency;

generating a second electrical signal having a second frequency that is higher than the first frequency;

coupling a combination of the first and second electrical signals to a tunable optical filter;

applying an optical input to the tunable optical filter while the combination of the first and second electrical signals is being applied to the tunable optical filter;

applying an optical output of the tunable optical filter to a photodetector;

coupling an electrical output from the photodetector to a lock-in detector;

generating a third electrical signal having a frequency that is double the second frequency;

phase shifting the third electrical signal;

coupling the phase shifted third electrical signal to the lock-in detector;

monitoring an output of the lock-in detector.

15. The method of claim 14, wherein the tunable optical filter comprises a tunable Fabry-Perot optical filter.

16. The method of claim 14, wherein the optical input comprises a dense wavelength division multiplexing optical input.